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International Specialists in the Environment

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MEMORANDUM

TO: Paul Doherty, EPA/START PO

FROM: Joe Parish, E & E/STM for J.P.

THRU: Hieu Q. Vu, P.E., CHMM, E & E/START PM

DATE: January 29, 1997

SUBJECT: Removal Action: Bristol Steel Dioxin Site, Maplewood, Missouri

CERCLIS I.D.: MOD106564750
SSID: 07AL
TDD#: S07-9608-005
PAN#: 0261BSRAXX
OSC: Don Hamera

INTRODUCTION

The Ecology and Environment, Inc. (E & E) Superfund Technical Assessment and Response Team (START) was tasked by the U.S. Environmental Protection Agency (EPA) Region VII Emergency Response and Removal (ER&R) program to provide site documentation and sampling as required during removal of nylon bags containing 2,3,7,8-tetrachlorodibenzo-p-dioxin (dioxin)-contaminated soil at the Bristol Steel site, Maplewood, Missouri. START member (STM) Joe Parish was the START project manager. The EPA on-scene coordinator (OSC) was Don Hamera.

BACKGROUND, SITE DESCRIPTION, AND SITE HISTORY

The Bristol Steel site is located in Maplewood, Missouri, at 3117 Big Bend Boulevard. The geographic coordinates are 38° 36' 26'' N latitude and 90° 19' 34'' W longitude (Attachment A: Site Location Map). The site is a former structural steel fabricating plant and covers 26 acres.

The Bliss Waste Oil Company operated in the 1970's, spraying parking lots, roadways, and horse arenas with waste oil, chemicals, and sludges for dust suppression and weed control. Sludge from still bottoms was routinely received from the now-defunct Northeastern Pharmaceutical and Chemical Company (NEPACCO) plant in Verona, Missouri, which produced hexachlorophene that was used in the manufacture of industrial/surgical soap. Dioxin was subsequently found to be a by-product of the hexachlorophene production, with elevated concentrations of the contaminant primarily residing in the still-bottom sludge. Low-viscosity waste oil was often sent to other oil recyclers/reformulators by Bliss' company, while heavier oils and sludges were generally mixed with surplus waste oil for surficial application via spraying.

The EPA became involved with the Bristol Steel site after it was discovered that areas of the site that had been covered with crushed stone were periodically sprayed with potentially dioxin-contaminated oil for dust control in the 1970's. Subsequent site investigations detected dioxin-contaminated soil in those areas above the industrial action level of 10 parts per billion (ppb); a removal action was initiated. Soil removal occurred from September 19 through November 9, 1990. A total of 948 cubic yards of soil was removed and stored on site in 506 nylon bags in a temporary steel storage building.

The activities described herein were a result of an agreement between the EPA and Syntex (a successor company to NEPACCO), whereby Syntex agreed to incinerate dioxin-contaminated soils from 26 eastern Missouri sites. Incineration at a Times Beach-based facility begin in 1996.

SITE ACTIVITIES

On August 7, 1996, STM Parish met with OSC Hamera to discuss post-cleanup sampling strategy and placement of a single PS-1 air monitor. It was agreed to divide the floor of the storage building into 10 equal sections following the removal of the dioxin-contaminated bags, and to sample with a Dust-Buster™ hand-held vacuum for dioxin analysis (sample GZ1AL-001). Also, a location was selected immediately southeast of the building for the General Metal Works PS-1 air sampler (Attachment B: Site Sketch Map).

On August 8, 1996, the OSC met with STM Dave Kinroth to collect a dust sample from the floor of the bag building. A nine-aliquot sample was collected from the floor of the bag building using a stainless steel spoon and an aluminum pie pan. The sampling was done to determine whether sediment

that had collected on the floor since the placement of the nylon bags originated from erosion problems outside the building or from spillage from the bags. Results of the sample analysis indicated that the sediment was not contaminated with dioxin, so it was assumed that the sediment originated from outside the building and the crew could proceed removing the bags in level D personal protection equipment (PPE).

On August 20, 1996, OSC Hamera contacted START and indicated that the Bristol Steel bag removal operation would begin the next morning. STMs Kinroth and Kevin Williamson arrived on site and set up a PS-1 air monitor, securing it with fencing and a padlock. Briefly, the PS-1's samples were collected with a 4-inch glass fiber filter (GFF) placed in the upper chamber of the dual-chamber module to collect particulate-bound contaminants. The vapor phase contaminants were collected in the lower chamber, where the polyurethane foam (PUF) medium was contained in a cylindrical glass cartridge that was supported by a stainless-steel mesh retainer. The PS-1s were operated for 72 hours and the beginning and ending flow rate, time, and meter reading were recorded. Following the removal of the modules from the sampler, the GFF was removed, folded in half with the particulate-bearing side inward, and placed in the glass cartridge containing the PUF. The sample was wrapped in aluminum foil and placed in a clean jar and sealed with a Teflon-lined lid. The air monitor was set to start up the next morning before the removal operations began.

On August 21, STM Kinroth met with Jerry McDaniel, the response manager for the removal contractors, Earth Technologies Remediation Services, Inc., (Earth Tech). McDaniel informed START that the crew was having problems moving bags because of their weight (approximately 5,000 pounds each) and the height to which they were stacked. Some bags had ruptured and the removal was not proceeding as smoothly as anticipated. By the following day, Earth Tech had developed a procedure to resolve the bag-handling difficulties.

The removal of the bags continued from August 23 through August 28, 1996, excluding August 25. STMs Parish, Kinroth, Williamson, and Joe Davis alternately performed site documentation and sample activities. During the operation, Earth Tech worked with an average of two laborers, one response manager, and six truck drivers who were subcontracted through Fort Trucking. By August 28, all the bags had been removed from the building and Earth Tech began cleaning the building by dry vacuuming. This operation was completed on August 29, and STM Parish arrived on site to perform verification sampling.

Clean up verification samples were collected from the floor, walls, and rafters of the building. The floor and ceiling were sampled with a Dust-Buster™ hand-held vacuum cleaner and the walls were wipe sampled. The floor was divided into 10 cells measuring 20 by 30 feet each. A nine-aliquot sample was collected from each of those cells, (samples GZ1AL-003—012) plus one duplicate (GZ1AL-009D); (Attachment B: Site Sketch Map). A dust sample was collected from the ceiling by taking one aliquot from each of the 10 rafters (GZ1AL-017). Four wipe samples, each consisting of four aliquots with a combined coverage of 2,500 square centimeters (cm^2), were collected from the building walls (GZ1AL-013—016). The verification samples, and the PS-1 air monitoring samples (GZ1AL-002 and 018), were submitted to the contract lab, American Technical and Analytical Services (ATAS) for dioxin analysis. The results are reported in Table 1.

Table 1

SAMPLING ACTIVITIES

Sample Number	Media	Description	Date	Result
GZ1AL-001	Dust	Floor, Pre-Removal	8/8/96	0.3U
GZ1AL-002	Air	PS-1, 1st Run	8/21-24	0.94U
GZ1AL-003	Dust	Floor, Cell 1	8/29/96	2.04
GZ1AL-004	Dust	Floor, Cell 2	8/29/96	2.40
GZ1AL-005	Dust	Floor, Cell 3	8/29/96	0.92
GZ1AL-006	Dust	Floor, Cell 4	8/29/96	2.79
GZ1AL-007	Dust	Floor, Cell 5	8/29/96	0.63
GZ1AL-008	Dust	Floor, Cell 6	8/29/96	1.05
GZ1AL-009	Dust	Floor, Cell 7	8/29/96	2.34
GZ1AL-009D	Dust	Floor, Cell 7	8/29/96	2.32
GZ1AL-010	Dust	Floor, Cell 8	8/29/96	2.25
GZ1AL-011	Dust	Floor, Cell 9	8/29/96	5.55
GZ1AL-012	Dust	Floor, Cell 10	8/29/96	I
GZ1AL-013	Wipe	South Wall	8/29/96	0.4U
GZ1AL-014	Wipe	North Wall	8/29/96	0.4U
GZ1AL-015	Wipe	East Wall	8/29/96	0.4U
GZ1AL-016	Wipe	West Wall	8/29/96	0.4U
GZ1AL-017	Dust	Rafters	8/29/96	0.3U
GZ1AL-018	Air	PS-1, 2nd Run	8/26-29	0.87U
GZ1AL-019	Wipe	Floor, Southwest Quad	9/12/96	0.4U
GZ1AL-020	Wipe	Floor, Southeast Quad	9/12/96	0.4U
GZ1AL-021	Wipe	Floor, Northwest Quad	9/13/96	0.4U
GZ1AL-022	Wipe	Floor, Northeast Quad	9/13/96	0.4U

UNITS: Dust = UG/KG
Wipe = PG/CM2
Air = PG/M3

CODES: U = Non-detect.
I = Invalid result.

The analytical results of the building samples indicated that several of the sample cells contained dioxin above the action level of 1 ppb. Results from the rafter and wipe samples were non-detect (Table 1), as required to meet the action level. Eight of the 10 samples collected from the building's floor were above the action level of 1 ppb (Table 1). Consequently, the Emergency Response Cleanup Services (ERCS) contractor, Smith Environmental Technologies, was tasked to reclean the building.

On September 12, 1996, ERCS began the cleanup operation using a wet vacuuming technique. On September 13, 1996, ERCS completed the building cleanup, and the START collected four wipe samples. Each wipe sample comprised four aliquots totaling 2,500 cm^2.

The analytical results of the four wipe samples were below 0.4 picograms per centimeter squared (pg/cm^2), indicating that the desired cleanup criteria had been achieved. Results from both of the PS-1 samples were reported as non-detect (below 1 picogram per cubic meter [pg/m3]).

CONCLUSIONS AND RECOMMENDATIONS

Surficial soil at the Bristol Steel site, in Maplewood, Missouri, was contaminated with dioxin when waste oil containing dioxin was applied to control dust. In 1990, the contaminated soil was excavated, bagged, and stored in an on-site storage building. Approximately 500 bags, containing over 900 cubic yards of soil were removed between August 21 and August 28, 1996, from the storage building and shipped to Times Beach for incineration. The final building cleanup was completed on September 12 and 13, 1996. Final sampling of the floor, walls and rafters of the building verified the cleanup.

Preremedial Considerations

Because the Bristol Steel site is on the National Priorities List, contaminant exposure pathways (i.e., ground water, surface water, soil, air exposure) have been thoroughly evaluated in accordance with the site assessment process. However, the removal of the waste sources during the cleanup activity will likely reduce any threats to human health and the environment that are posed by the site. No additional efforts are anticipated at this time.

Removal Considerations

As a result of the removal of the stored dioxin-contaminated soil described in this report, no conditions are known to remain that would warrant further removal activities.

ATTACHMENTS:

A. Site Location Map

B. Site Sketch Map

C. Analytical Results

D. Photographic Documentation

ATTACHMENT A

SITE LOCATION MAP

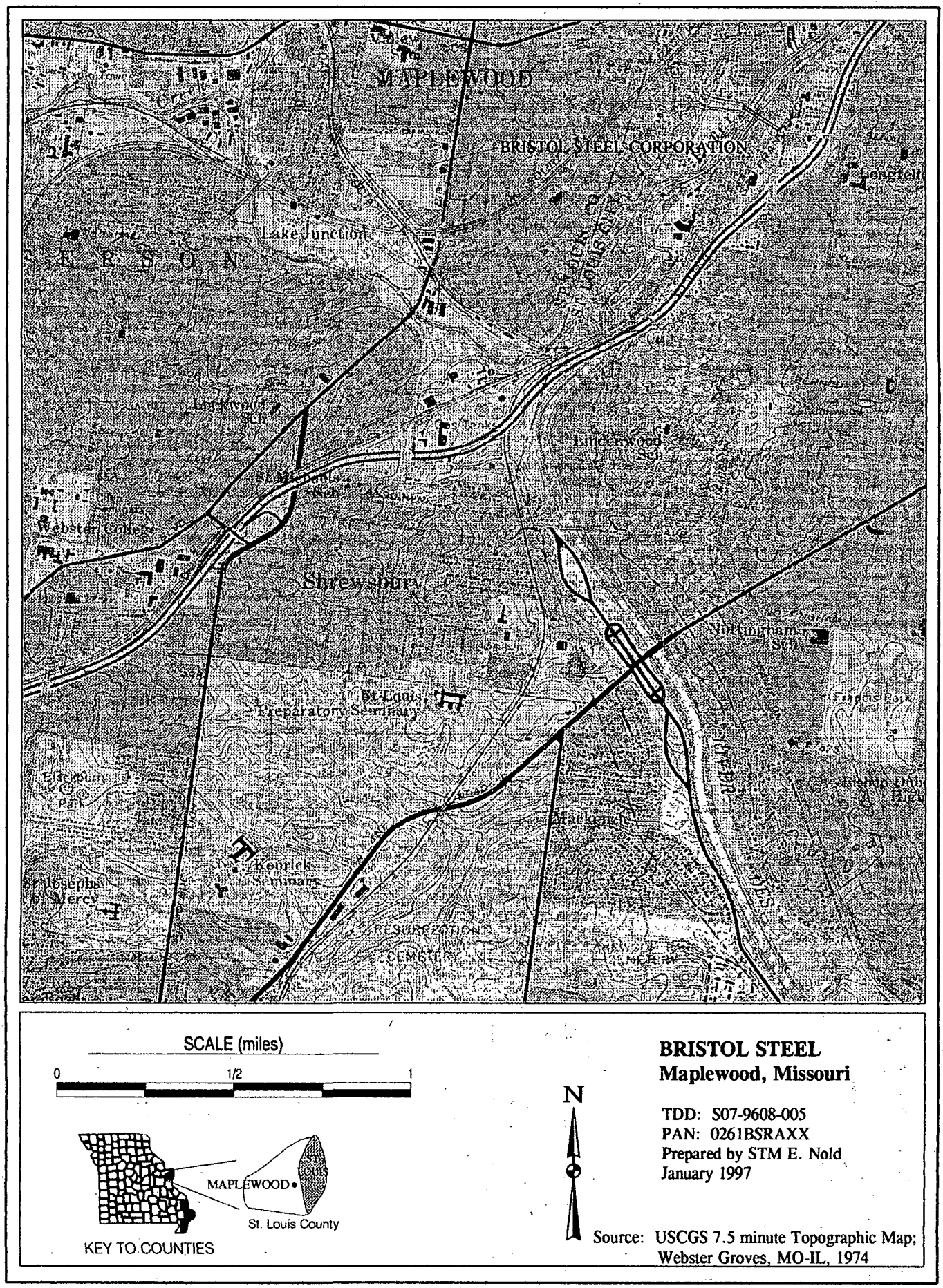
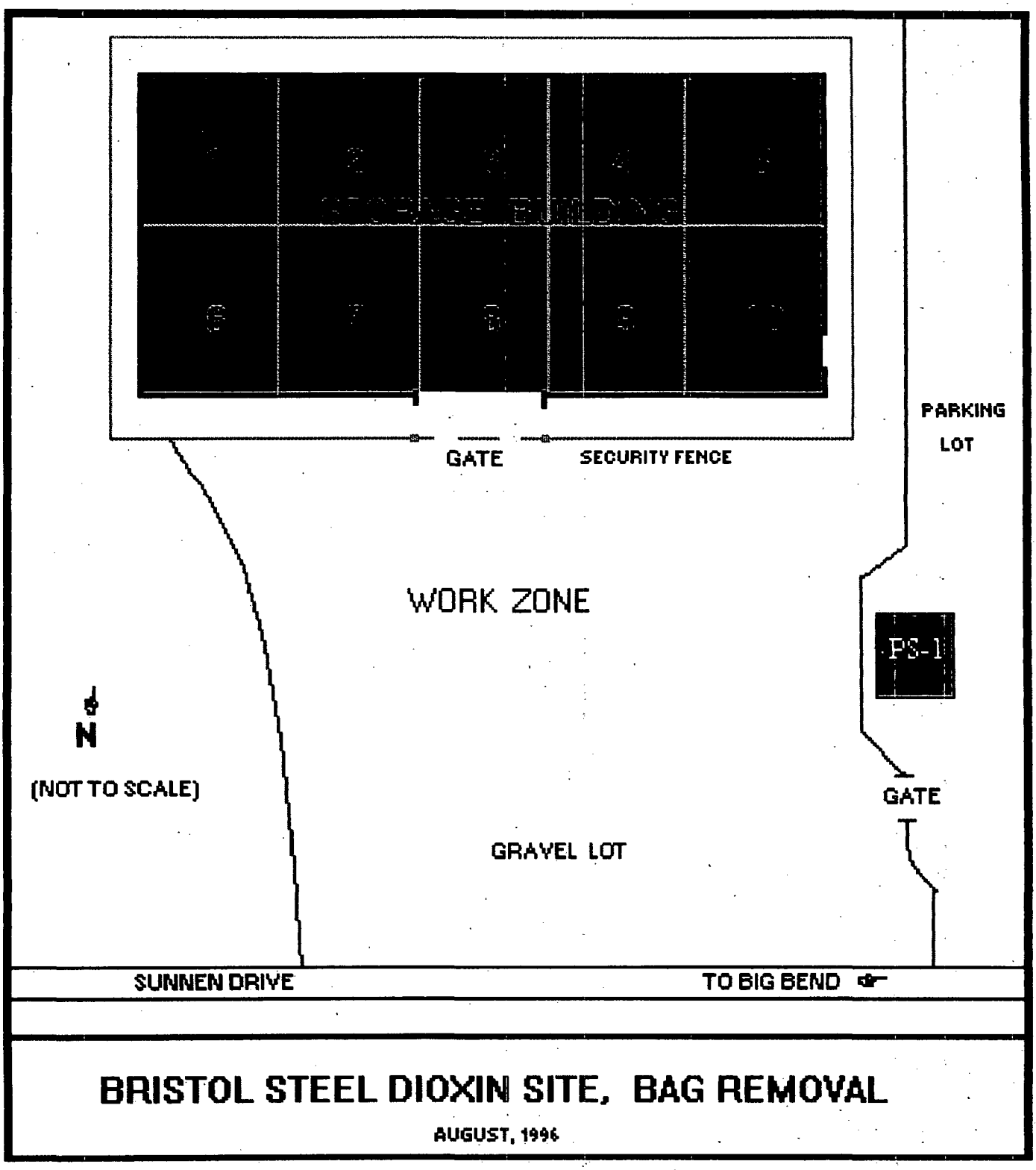


Figure 1. Site location map

ATTACHMENT B

SITE SKETCH MAP



BRISTOL STEEL DIOXIN SITE, BAG REMOVAL

AUGUST, 1996

ATTACHMENT C

ANALYTICAL RESULTS

MEMORANDUM

SUBJECT: TRANSMITTAL REPORT FOR CASE 50040 BATCH A

FROM: ANDREA JIRKA
CHIEF, LABO/ENSV

TO: CHIEF, EP&R/ENSV

ADD1: DIOXIN, 2378-TETRACHLORODIBENZO-P, RAPID

SMO NUMBER	EPA SAMPLE NUMBER	SAMPLE DESCRIPTION	SITE SECTION LAYER	LAB	ANALYSIS DATE	CONCENTRATION	D I D	UNITS	V C
	96-BPL02-115M	METHOD BLANK	- -	ATS	08/28/96	1.00	U	PG/M3	V
	96-GZ1AL-002	AIR MONITOR BS-1	- -	ATS	08/28/96	0.938	U	PG/M3	V

MEMORANDUM

SUBJECT: TRANSMITTAL REPORT FOR CASE 50040 BATCH B

FROM: ANDREA JIRKA
CHIEF, LABO/ENSV

TO: CHIEF, EP&R/ENSV

SD02: DIOXIN, 2378-TETRACHLORODIBENZO-P, RAPID
REPORTED ON A WET WEIGHT BASIS

SMO NUMBER	EPA SAMPLE NUMBER	SAMPLE DESCRIPTION	SITE SECTION LAYER	LAB	ANALYSIS DATE	CONCENTRATION	D I D	UNITS	V C
	96-GZ1AL-003	FLOOR-CELL 1	- -	ATS	08/31/96	2.04		NG/GM	V
	96-GZ1AL-004	FLOOR-CELL 2	- -	ATS	08/31/96	2.40		NG/GM	V
	96-GZ1AL-005	FLOOR-CELL 3	- -	ATS	08/31/96	0.924		NG/GM	V
	96-GZ1AL-006	FLOOR-CELL 4	- -	ATS	08/31/96	2.79		NG/GM	V
	96-GZ1AL-007	FLOOR-CELL 5	- -	ATS	08/31/96	0.633		NG/GM	V
	96-GZ1AL-008	FLOOR-CELL 6	- -	ATS	09/03/96	1.05		NG/GM	V
	96-GZ1AL-009	FLOOR-CELL 7	- -	ATS	08/31/96	2.34		NG/GM	V
	96-GZ1AL-009D	FLOOR-CELL 7-SPLIT	- -	ATS	08/31/96	2.32		NG/GM	V
	96-GZ1AL-010	FLOOR-CELL 8	- -	ATS	08/31/96	2.25		NG/GM	V
	96-GZ1AL-011	FLOOR-CELL 9	- -	ATS	08/31/96	5.55		NG/GM	V
	96-GZ1AL-012	FLOOR-CELL 10	- -	ATS	09/04/96	INVALID		NG/GM	
	96-GZ1AL-017	RAFTERS OF BUILDING	- -	ATS	08/31/96	0.300	U	NG/GM	V
	96-GZ1AL-019P	PERFORMANCE EVALUATION AUDIT SAMPLE	- -	ATS	08/31/96	1.56		NG/GM	V
	96-GZ1AL-019T	TRUE VALUE PE AUDIT SAMPLE	- -	ATS	08/31/96	1.71		NG/GM	V
	96-GZ1AL-020F	FIELD BLANK AUDIT	- -	ATS	08/31/96	0.300	U	NG/GM	V

MEMORANDUM

SUBJECT: TRANSMITTAL REPORT FOR CASE 50040 BATCH B

FROM: ANDREA JIRKA
CHIEF, LABO/ENSV

TO: CHIEF, EP&R/ENSV

HD03: DIOXIN, 2378-TETRACHLORODIBENZO-P, WIPE, RAPID

SMO NUMBER	EPA SAMPLE NUMBER	SAMPLE DESCRIPTION	SITE SECTION	SITE LAYER	LAB	ANALYSIS DATE	CONCENTRATION	D I D	UNITS	V C
	96-GZ1AL-013	SOUTH WALL	-	-	ATS	08/31/96	0.400	U	PGCM2	V
	96-GZ1AL-014	NORTH WALL	-	-	ATS	08/31/96	0.400	U	PGCM2	V
	96-GZ1AL-015	EAST WALL	-	-	ATS	08/31/96	0.400	U	PGCM2	V
	96-GZ1AL-016	WEST WALL	-	-	ATS	08/31/96	0.400	U	PGCM2	V

MEMORANDUM

SUBJECT: TRANSMITTAL REPORT FOR CASE 50040 BATCH C

FROM: ANDREA JIRKA
CHIEF, LABO/ENSV

TO: CHIEF, EP&R/ENSV

ADD1: DIOXIN, 2378-TETRACHLORODIBENZO-P, RAPID

SMO NUMBER	EPA SAMPLE NUMBER	SAMPLE DESCRIPTION	SITE SECTION LAYER	LAB	ANALYSIS DATE	CONCENTRATION	D	I D	UNITS	V C
	96-BPL02-124M	METHOD BLANK	- -	ATS	09/04/96	1.00	U		PG/M3	V
	96-BPL02-129M	METHOD BLANK	- -	ATS	09/05/96	1.00	U		PG/M3	V
	96-GZ1AL-018	BS-1	- -	ATS	09/05/96	0.870	U		PG/M3	V

MEMORANDUM

SUBJECT: TRANSMITTAL REPORT FOR CASE 50040 BATCH B

FROM: ANDREA JIRKA
CHIEF, LABO/ENSV

TO: CHIEF, EPER/ENSV

MD03: DIOXIN, 2378-TETRACHLORODIBENZO-P, WIPE, RAPID

SMO NUMBER	EPA SAMPLE NUMBER	SAMPLE DESCRIPTION	SITE SECTION	SITE LAYER	LAB	ANALYSIS DATE	CONCENTRATION	D	I D	UNITS	V C
	96-BPL02-119M	METHOD BLANK	-	-	ATS	08/31/96	0.400		U	PGCM2	V
	96-GZ1AL-013	SOUTH WALL	-	-	ATS	08/31/96	0.400		U	PGCM2	V
	96-GZ1AL-014	NORTH WALL	-	-	ATS	08/31/96	0.400		U	PGCM2	V
	96-GZ1AL-015	EAST WALL	-	-	ATS	08/31/96	0.400		U	PGCM2	V
	96-GZ1AL-016	WEST WALL	-	-	ATS	08/31/96	0.400		U	PGCM2	V

MEMORANDUM

SUBJECT: TRANSMITTAL REPORT FOR CASE 50053 BATCH A

FROM: ANDREA JIRKA
CHIEF, LABO/ENSV

TO: CHIEF, EPER/ENSV

HD03: DIOXIN, 2378-TETRACHLORODIBENZO-P, WIPE, RAPID

SMO NUMBER	EPA SAMPLE NUMBER	SAMPLE DESCRIPTION	SITE SECTION LAYER	LAB	ANALYSIS DATE	CONCENTRATION	D	I	UNITS	V C
	96-BPL02-150M	METHOD BLANK	- -	ATS	09/12/96	0.400	U		PGCM2	V
	96-BPL02-153M	METHOD BLANK	- -	ATS	09/13/96	0.400	U		PGCM2	V
	96-GZ1AL-021	SOUTH - WEST QUAD OF FLOOR	- -	ATS	09/12/96	0.400	U		PGCM2	V
	96-GZ1AL-022	SOUTH - EAST QUAD OF FLOOR	- -	ATS	09/13/96	0.400	U		PGCM2	V
	96-GZ1AL-023F	FIELD BLANK	- -	ATS	09/12/96	0.400	U		PGCM2	V

MEMORANDUM

SUBJECT: TRANSMITTAL REPORT FOR CASE 50053 BATCH B

FROM: ANDREA JIRKA
CHIEF, LABO/ENSV

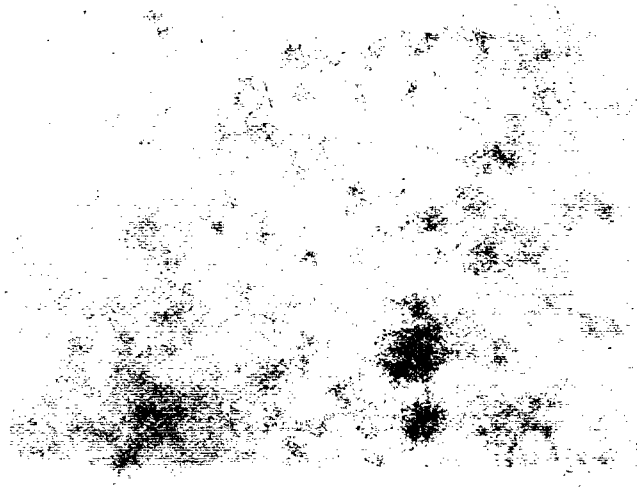
TO: CHIEF, EP&R/ENSV

HDO3: DIOXIN, 2378-TETRACHLORODIBENZO-P, WIPE, RAPID

SMO NUMBER	EPA SAMPLE NUMBER	SAMPLE DESCRIPTION	SITE SECTION LAYER	LAB	ANALYSIS DATE	CONCENTRATION	D I D	UNITS	V C
	96-BPL02-154M	METHOD BLANK	- -	ATS	09/13/96	0.400	U	PGCM2	V
	96-GZ1AL-026	WIPE, FLOOR, N-W QUAD OF BUILDING	- -	ATS	09/13/96	0.400	U	PGCM2	V
	96-GZ1AL-025	WIPE, FLOOR, N-E QUAD OF BUILDING	- -	ATS	09/13/96	0.400	U	PGCM2	V

ATTACHMENT D

PHOTOGRAPHIC DOCUMENTATION



Ecology and Environment, Inc.

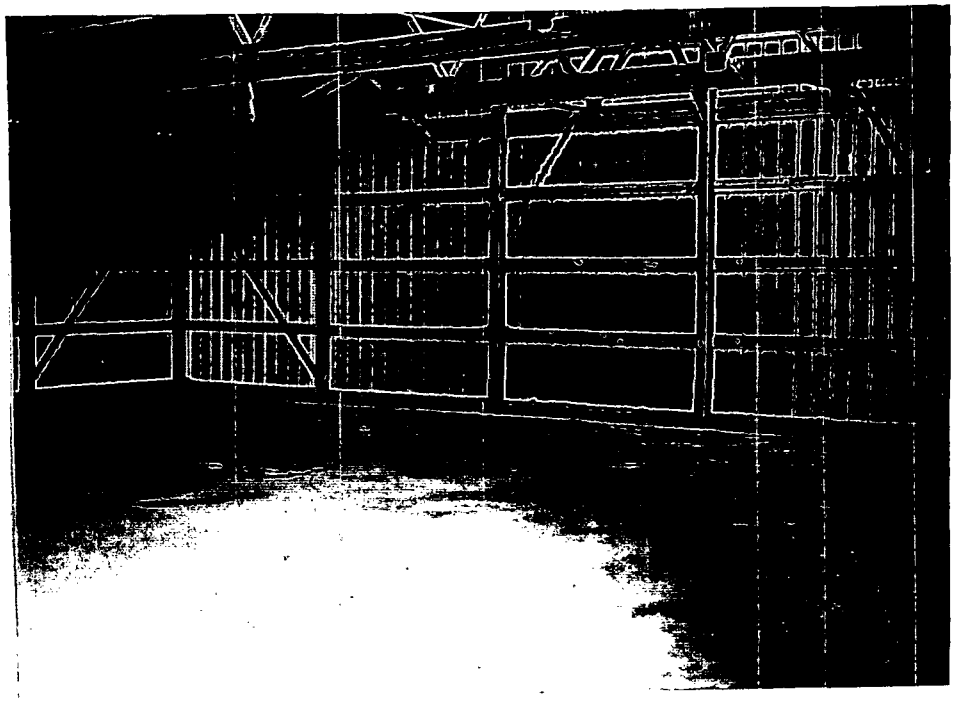
Photographic Record

Client: U.S. EPA REGION VII — E & E Job No.: KJ7102
Camera Make: FUJI DISCOVERY 1000 ZOOM — Serial No. : 60411266

SITE NAME: Bristol Steel Dioxin Site
SITE LOCATION: Maplewood, Missouri
TDD/PAN No.: S07-9608-005/0261BSRAXX

Photographer: Parish
Date/Time : 8/30/96-1530
Lens: Type: 35-80 mm
Serial No.: 60411266
Frame No. : 5
Direction : NW
Comments :

Inside building after the cleanup



Photographer: Parish
Date/Time : 8/30/96-1531
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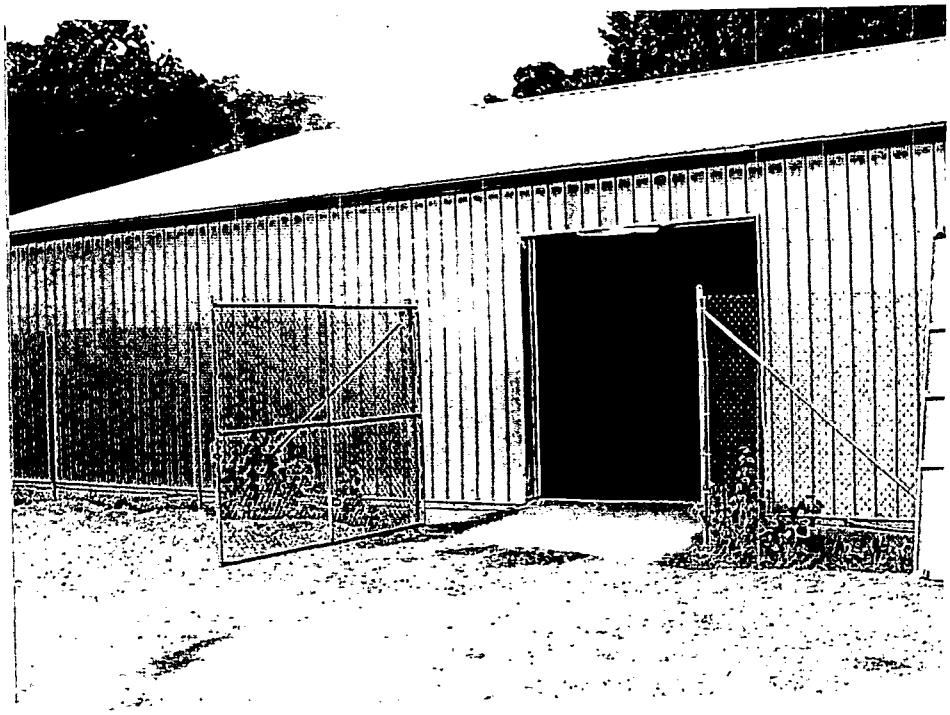
Direction : NW
Comments :

Outside building after the cleanup



Ecology and Environment, Inc.

Photographic Record

Client: U.S. EPA REGION VII E & E Job No.: KJ7102
Camera Make: FUJI DISCOVERY 1000 ZOOM Serial No. : 60411266

SITE NAME: Bristol Steel Dioxin Site
SITE LOCATION: Maplewood, Missouri
TDD/PAN No.: S07-9608-005/0261BSRAXX

Photographer: Kinroth
Date/Time : 8/23/96-1136
Lens: Type: 35-80 mm
Serial No.: 60411266
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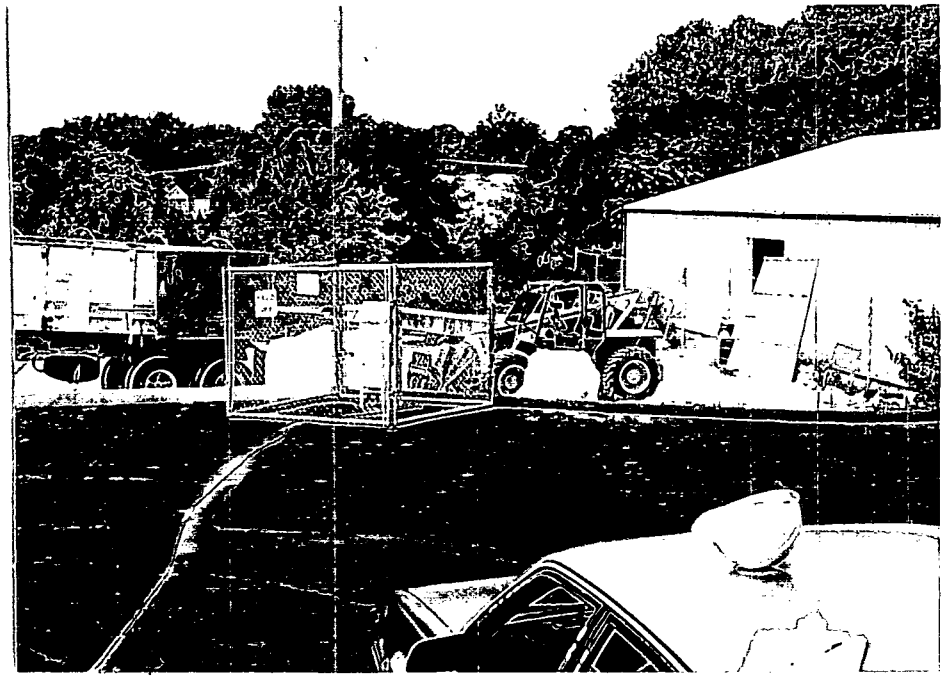
Direction : NW
Comments :

Site overview



Photographer: Kinroth
Date/Time : 8/23/96-1140
Lens: Type: 35-80 mm
Serial No.: 6041126
Frame No. : 4
Direction : NE
Comments :

Inside building, bag removal operations